

AFCTN Test Report 93-022

AFCTB-ID 92-039



Multi-Volume Tape Transfer Test



Using:



Texas Instruments Data

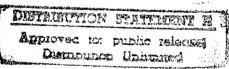


MIL-STD-1840A



Quick Short Test Report

28 July 1992



19960822 189



Prepared for

Electronic Systems Center

DTIC QUALITY INSPECTED 3

Multi-Volume Tape Transfer Test Using:

Texas Instruments Data

MIL-STD-1840A

Quick Short Test Report

28 Jul 1992

Prepared By Air Force CALS Test Bed Wright-Patterson AFB, OH 45433

AFCTB Contact

Gary Lammers (513) 427-2295

AFCTN Contact

Mel Lammers (513) 427-2295

DISCLAIMER

This document was prepared as an account of the work sponsored by the Air Force. Neither the United States Government, the Air Force, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, product, or process disclosed, nor represents that its use would not infringe on privately owned rights. Reference herein to any specific commercial products, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or the Air Force. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or the Air Force, and shall not be used for advertising or product endorsement purposes.

Available to the public from the National Technical Information Service U.S. Department of Commerce 5285 Port Royal Rd., Springfield, VA 22161

This report and those involved in its preparation do not endorse any product, process, or company stated herein. Use of these means by anyone does not imply certification by the Air Force CALS Test Network (AFCTN).

Contents

1.	Intro	duction1				
	1.1.	Background1				
	1.2.	Purpose2				
2.	Test :	Parameters3				
3.	1840A	Analysis4				
	3.1.	External Packaging4				
	3.2.	Transmission Envelope4				
		3.2.1. Tape Formats4				
		3.2.2. Declaration and Header Fields5				
4.	IGES 2	Analysis5				
5.	SGML 2	L Analysis5				
6.	Raste:	aster Analysis5				
7.	CGM Analysis5					
8.	Conclusions and Recommendations					
9.	Appendix A - Tapetool Report Logs7					
	9.1.	Tape Catalog7				
	9.2.	Tape Evaluation Log8				
	9.3.	Tape File Set Validation Log14				
	9.4.	USLynx Tape Log				
	9.5.	AGFA CAPS Log				
		CTN INTX Taretool Log				

1. Introduction

1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-Cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. they include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze Texas Instruments' interpretation and use of the CALS standards in transferring multi-volume tape data. Texas Instruments used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff on a 9-track magnetic tape. The data contained on the tape was not evaluated for this test.

2. Test Parameters

Test Plan:

AFCTB 92-039

Date of

Evaluation:

28 July 1992

Evaluator:

George Elwood

Air Force CALS Test Bed

HQ ESC/ENCP Suite 200

4027 Col Glenn Hwy Dayton OH 45431-1672

Data

Originator:

Michael Hurn

Texas Instruments

M/S 8420

P.O. Box 869305 Plano TX 75086

Data

Description:

Technical Manual Test

1 Document Declaration file

16 Initial Graphics Exchange Specification

(IGES) files

3 Raster files

Data Source System:

MIL-STD-1840A

HARDWARE

Sun 4/60

Cipher Data M995 GCR 9 Track Tape

SOFTWARE

Texas Instruments (TI) Tapetool v1.0

Evaluation Tools Used:

MIL-STD-1840A (TAPE)

SUN 3/280

AFCTN Tapetool v1.2.8 UNIX

AGFA Compugraphics CAPS/CALS v40.4

Cheetah Gold 486

USLynx 1840A Tape Handler AFCTN Tapetool v1.2.8 DOS

Standards Tested:

MIL-STD-1840A

3. 1840A Analysis

3.1 External Packaging

The tape arrived at the Air Force CALS Test Bed (AFCTB) enclosed in a box in accordance with ASTM D 3951. The exterior of the box was marked with the magnetic tape warning label, as required by MILSTD-1840A, para. 5.3.1.3.

The tape was not enclosed in a barrier bag or barrier sheet material, as required by MIL-STD-1840A, para. 5.3.1.2. Inspection of the tape reel showed the required label indicating the recording density as required by MIL-STD-1840A, para. 5.3.1. Enclosed in the box was a packing list showing all files that were recorded on the tape.

3.2 Transmission Envelope

The 9-track tape received by the AFCTB contained MIL-STD-1840A files. The files were named per the standard conventions.

3.2.1 Tape Formats

This was the first multi-volume tape sent to the AFCTB.

The 1840A Tape was run through the AFCTN Tapetool v1.2.8 utility on the Sun 3/280. This utility was unable to handle the multivolume tape set. It generated an error message at the end of the first tape.

The tape was also read using AGFA CAPS read1840A utility on the Sun 3/280. This utility was also unable to handle the tape.

The tape was read using the AFCTN Tapetool v1.2.8 for PC running a QualStar 9-track tape drive. This system was able to handle the tape with several reported problems. The problems were traced to the AFCTN Tapetool. This was the first test of the utility in the multi-volume mode and two minor bugs were found:

- *** ERROR (ANSI X3.27; 8.3.1.1) Columns 12-24 are reserved for future standardization and must be spaces.
- *** ERROR (ANSI X3.27; 6.5.2) Invalid file sequence number. File sequence numbers should increase by 1 for each file. Previous = 14; Expected = 15; Actual = 14

The tape was also read using USLynx CALSTAPE utility. This program was unable to read the tape. The problem was traced to the file naming convension used on tape. The USLynx software uses the name figid record for the name of the new file. Because all of the files had NONE as the value, the USLYnx software could not handle any field beyond the first data file.

3.2.2 Declaration and Header Fields

No reported errors were found in the Document Declaration file or data record headers.

4. IGES Analysis

The IGES files were not evaluated for this test.

5. SGML Analysis

No Standard Generalized Markup Language (SGML) files were included on this tape.

6. Raster Analysis

The Raster files were not evaluated for this test.

7. CGM Analysis

No Computer Graphics Metafile (CGM) files were included on this tape.

8. Conclusions and Recommendations

In summary, the MIL-STD-1840A tape from Texas Instruments was basically correct. The tape could not be read properly using the AFCTN $Tapetool\ v1.2.8\ UNIX$ for unknown reasons. The PC version of the utility did read the tape correctly. The two other tape reading utilities in the test bed could not read the tape.

9. Appendix A - Tapetool Report Logs

9.1 Tape Catalog

Air Force CALS Test Network Catalog Evaluation - Version 1.2; Release Number 8

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information ANSI X3.27 (1987) - File Structure and Labeling of Magnetic Tapes for Information Interchange

ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Tue Jul 28 11:04:30 1992

MIL-STD-1840A File Catalog

File Set Directory: C:\TAPETOOL\SET004

Page: 1

		Record		
		Format/	Block	Selected/
File Name	File Type	Length	Length/Total	Extracted
D001	Document Declaration	D/00260	02048/000001	Extracted
D001Q001	IGES		02000/000257	Extracted
D001Q002	IGES	•	02000/000257	Extracted
D001Q003	IGES		02000/000257	Extracted
D001Q004	IGES		02000/000257	Extracted
D001Q005	IGES		02000/000257	Extracted
D001Q006	IGES		02000/000257	Extracted
D001Q007	IGES	F/00080	02000/000257	Extracted
D001Q008	IGES	F/00080	02000/000257	Extracted
D001Q009	IGES	F/00080	02000/000257	Extracted
D001Q010	IGES	F/00080	02000/000257	Extracted
D001Q011	IGES	F/00080	02000/000257	Extracted
D001Q012	IGES	F/00080	02000/000257	Extracted
D001Q013	IGES	F/00080	02000/000253	Extracted
D001Q013	IGES	F/00080	02000/000003	Extracted
D001Q014	IGES	F/00080	02000/000257	Extracted
D001Q015	IGES	F/00080	02000/000257	Extracted
D001Q016	IGES		02000/000257	Extracted
D001R017	Raster	F/00128	02048/000030	Extracted
D001R018	Raster		02048/000030	Extracted
D001R019	Raster		02048/000030	Extracted

Catalog Process terminated normally.

9.2 Tape Evaluation Log

Air Force CALS Test Network Tape Evaluation - Version 1.2; Release Number 8 Standards referenced:

ANSI X3.27 (1987) - File Structure and Labeling of Magnetic Tapes for Information Interchange

ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Tue Jul 28 10:57:45 1992

ANSI Tape Import Log

Rewinding tape to load point...

VOL1CALS01

TI-TAPETOOL

Label Identifier: VOL1 Volume Identifier: CALS01 Volume Accessibility: Owner Identifier: Label Standard Version: 4

*** ERROR (ANSI X3.27; 8.3.1.1) - Columns 12-24 are reserved

for future standardization and must be spaces.

HDR1D001

CALS0100010001000000 92196 00000 000000TI-TAPETOOL

Label Identifier: HDR1 File Identifier: D001

File Set Identifier: CALS01 File Section Number: 0001 File Sequence Number: 0001 Generation Number: 0000

Generation Version Number: 00

Creation Date: 92196 Expiration Date: 00000 File Accessibility: Block Count: 000000

Implementation Identifier: TI-TAPETOOL

HDR2D0204800260

00

Label Identifier: HDR2 Recording Format: D Block Length: 02048 Record Length: 00260 Offset Length: 00

******** Tape Mark *********

Actual Block Size Found = 2048 Bytes.

Number of data blocks read = 1.

******* Tape Mark *********

EOF1D001

CALS0100010001000000 92196 00000 000001TI-TAPETOOL

Label Identifier: EOF1 File Identifier: D001

File Set Identifier: CALS01 File Section Number: 0001 File Sequence Number: 0001 Generation Number: 0000

Generation Version Number: 00

Creation Date: 92196 Expiration Date: 00000 File Accessibility: Block Count: 000001

Implementation Identifier: TI-TAPETOOL

EOF2D0204800260

00

Label Identifier: EOF2 Recording Format: D Block Length: 02048 Record Length: 00260 Offset Length: 00

****** Tape Mark *********

HDR1D0010001

CALS0100010002000000 92196 00000 000000TI-TAPETOOL

Label Identifier: HDR1 File Identifier: D0010001 File Set Identifier: CALS01 File Section Number: 0001 File Sequence Number: 0002 Generation Number: 0000

Generation Version Number: 00

Creation Date: 92196 Expiration Date: 00000 File Accessibility: Block Count: 000000

Implementation Identifier: TI-TAPETOOL

HDR2F0200000080

00

Label Identifier: HDR2
Recording Format: F
Block Length: 02000
Record Length: 00080
Offset Length: 00

******** Tape Mark **********

Actual Block Size Found = 2000 Bytes.

Number of data blocks read = 257.

******** Tape Mark **********

EOF1D001Q001

CALS0100010002000000 92196 00000 000257TI-TAPETOOL

Label Identifier: EOF1
File Identifier: D001Q001
File Set Identifier: CALS01
File Section Number: 0001
File Sequence Number: 0002
Generation Number: 0000

Generation Version Number: 00

Creation Date: 92196
Expiration Date: 00000
File Accessibility:
Block Count: 000257

Implementation Identifier: TI-TAPETOOL

EOF2F0200000080

00

Label Identifier: EOF2
Recording Format: F
Block Length: 02000
Record Length: 00080
Offset Length: 00

******* Tape Mark *********

<<<< PART OF LOG REMOVED HERE >>>>

******* Tape Mark **********

HDR1D001Q013

CALS0100010014000000 92196 00000 000000TI-TAPETOOL

Label Identifier: HDR1
File Identifier: D001Q013
File Set Identifier: CALS01

File Section Number: 0001 File Sequence Number: 0014 Generation Number: 0000 Generation Version Number: 00

Creation Date: 92196
Expiration Date: 00000
File Accessibility:
Block Count: 000000

Implementation Identifier: TI-TAPETOOL

HDR2F0200000080

00

Label Identifier: HDR2
Recording Format: F
Block Length: 02000
Record Length: 00080
Offset Length: 00

******** Tape Mark **********

Actual Block Size Found = 2000 Bytes.

Number of data blocks read = 253.

*** ERROR (ANSI X3.27; 6.3.2.1) - Tape Mark expected.

******* Tape Mark *********

EOV1D001Q013

CALS0100010014000000 92196 00000 000254TI-TAPETOOL

Label Identifier: EOV1
File Identifier: D001Q013
File Set Identifier: CALS01
File Section Number: 0001
File Sequence Number: 0014
Generation Number: 0000
Generation Version Number: 00

Creation Date: 92196
Expiration Date: 00000
File Accessibility:
Block Count: 000254

Implementation Identifier: TI-TAPETOOL

*** ERROR (ANSI X3.27; 8.5.1.13) - EOV1 Block Count does not equal to the actual block count. Expected => 254; Actual => 253

EOV2F0200000080

00

Label Identifier: EOV2

Recording Format: F Block Length: 02000 Record Length: 00080 Offset Length: 00

******* Tape Mark *********

******* Tape Mark **********

########## End of Volume CALS01 ###############

Rewinding tape to load point...

Rewinding tape to load point...

VOL1CALS02

TI-TAPETOOL

Label Identifier: VOL1
Volume Identifier: CALS02
Volume Accessibility:
Owner Identifier:

Label Standard Version: 4

*** ERROR (ANSI X3.27; 8.3.1.1) - Columns 12-24 are reserved for future standardization and must be spaces.

HDR1D0010013

CALS0100020014000000 92196 00000 000000TI-TAPETOOL

Label Identifier: HDR1
File Identifier: D001Q013
File Set Identifier: CALS01
File Section Number: 0002
File Sequence Number: 0014
Generation Number: 0000
Generation Version Number: 00

Creation Date: 92196
Expiration Date: 00000
File Accessibility:
Block Count: 000000

Implementation Identifier: TI-TAPETOOL

*** ERROR (ANSI X3.27; 6.5.2) - Invalid file sequence number.

File sequence numbers should increase by 1 for each file.

Previous = 14; Expected = 15; Actual = 14

HDR2F0200000080

00

Label Identifier: HDR2 Recording Format: F

Block Length: 02000 Record Length: 00080 Offset Length: 00 ******* Tape Mark ********* Actual Block Size Found = 2000 Bytes. Number of data blocks read = 3. ******* Tape Mark ********* CALS0100020014000000 92196 00000 000003TI-TAPETOOL EOF1D001Q013 Label Identifier: EOF1 File Identifier: D0010013 File Set Identifier: CALS01 File Section Number: 0002 File Sequence Number: 0014 Generation Number: 0000 Generation Version Number: 00 Creation Date: 92196 Expiration Date: 00000 File Accessibility: Block Count: 000003 Implementation Identifier: TI-TAPETOOL EOF2F0200000080 00 Label Identifier: EOF2 Recording Format: F Block Length: 02000 Record Length: 00080 Offset Length: 00 ******** Tape Mark ********* <<<< PART OF LOG REMOVED HERE >>>> ******** Tape Mark ********* ########## End of Volume CALS02 ############### ########## End Of Tape File Set ############## Rewinding tape to load point ...

Tape Import Process terminated with 11 error(s), 0 warning(s),

and 0 note(s).

9.3 Tape File Set Validation Log

Air Force CALS Test Network File Set Evaluation - Version 1.2; Release Number 8 Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information MIL-R-28002 (1989) - Raster Graphics Representation In Binary Format, Requirements For

Tue Jul 28 11:04:30 1992

MIL-STD-1840A File Set Evaluation Log

File Set: SET004

Found file: D001

Extracting Document Declaration Header Records... Evaluating Document Declaration Header Records...

srcsys: Texas Instruments 6500 Chase Oaks Plano, Texas 75086 Mail Station 8420

srcdocid: AFCTN Test 11 and NWC Pretest 1

srcrelid: NONE chglvl: ORIGINAL dteisu: 19920714

dstsys: Air Force CALS Test Network AFLC/SJT WRIGHT-PATTERSON AFB, OH 44533-5001

dstdocid: NONE dstrelid: NONE dtetrn: 19920714 dlvacc: NONE filcnt: Q16,R3

ttlcls: UNCLASSIFIED doccls: UNCLASSIFIED doctyp: Product Data

docttl: NONE

Found file: D001Q001

Extracting IGES Header Records... Evaluating IGES Header Records...

srcdocid: NONE dstdocid: NONE txtfilid: NONE figid: NONE srcgph: NONE

doccls: UNCLASSIFIED

notes: NONE

Saving IGES Header File: D001Q001.HDR Saving IGES Data File: D001Q001.IGS

<<<< PART OF LOG FILE REMOVED HERE >>>>

Found file: D001R017

Extracting Raster Header Records...
Evaluating Raster Header Records...

srcdocid: NONE dstdocid: NONE txtfilid: NONE figid: NONE srcqph: NONE

doccls: UNCLASSIFIED

rtype: 1

rorient: 000,090

rpelcnt: 003120,004200

rdensty: 0300 notes: NONE

Saving Raster Header File: D001R017.HDR Saving Raster Data File: D001R017.GR4

<<<< PART OF LOG REMOVED HERE >>>>

Evaluating numbering scheme...

No errors were encountered during numbering scheme evaluation. Numbering scheme evaluation complete.

Checking file count...

No errors were encountered during file count verification. File Count verification complete.

No errors were encountered in Document D001.

No errors were encountered in this File Set.

MIL-STD-1840A File Set Evaluation Complete.

9.4 USLynx Tape Log

3 entries

1. 07/28/92 11:11:11 DOC002 header

srcsys: Texas Instruments 6500 Chase Oaks Plano, Texas 75086 Mail Station 8420

srcdocid: AFCTN Test 11 and NWC Pretest 1

srcrelid: NONE chglvl: ORIGINAL dteisu: 19920714

dstsys: Air Force CALS Test Network AFLC/SJT WRIGHT-PATTERSON AFB, OH 44533-5001

dstdocid: NONE dstrelid: NONE dtetrn: 19920714 dlvacc: NONE filcnt: Q16,R3

ttlcls: UNCLASSIFIED doccls: UNCLASSIFIED doctyp: Product Data

docttl: NONE

07/28/92 11:11:14 D001 transferred as DCLRTION
 07/28/92 11:11:31 D001Q001 transferred as NONE

9.5 AGFA CAPS Log

```
read1840A: --- Read declaration file 'D001
read1840A: writing data file 'aftb9239/NONE/NONE1.Q.igs'.
read1840A: writing data file 'aftb9239/NONE/NONE2.Q.igs'.
read1840A: writing data file 'aftb9239/NONE/NONE3.Q.igs'.
read1840A: writing data file 'aftb9239/NONE/NONE4.Q.igs'.
read1840A: writing data file 'aftb9239/NONE/NONE5.O.igs'.
read1840A: writing data file 'aftb9239/NONE/NONE6.O.igs'.
read1840A: writing data file 'aftb9239/NONE/NONE7.Q.igs'.
read1840A: writing data file 'aftb9239/NONE/NONE8.O.igs'.
read1840A: writing data file 'aftb9239/NONE/NONE9.Q.igs'.
read1840A: writing data file 'aftb9239/NONE/NONE10.Q.igs'.
read1840A: writing data file 'aftb9239/NONE/NONE11.O.igs'.
read1840A: writing data file 'aftb9239/NONE/NONE12.0.igs'.
read1840A: writing data file 'aftb9239/NONE/NONE13.0.igs'.
-- declaration file indicates 0 files of type T
-- declaration file indicates 0 files of type G
-- declaration file indicates 0 files of type H
-- declaration file indicates 16 files of type Q
-- declaration file indicates 3 files of type R
-- declaration file indicates 0 files of type C
-- declaration file indicates 0 files of type X
-- declaration file indicates 0 files of type P
-- declaration file indicates 0 files of type Z
*** WARNING: Declaration file indicates 16 IGES files, but tape contains 13 files.
*** WARNING: Declaration file indicates 3 Raster files, but tape contains 0 files.
```

9.6 **AFCTN UNIX Tapetool Log**

<><< PART OF LOG REMOVED HERE >>>>

******* Tape Mark *********

HDR1D001Q013

CALS0100010014000000 92196 00000 000000TI-TAPETOOL

Label Identifier: HDR1 File Identifier: D001Q013 File Set Identifier: CALS01 File Section Number: 0001 File Sequence Number: 0014 Generation Number: 0000

Generation Version Number: 00

Creation Date: 92196 Expiration Date: 00000 File Accessibility: Block Count: 000000

Implementation Identifier: TI-TAPETOOL

HDR2F0200000080

00

Label Identifier: HDR2 Recording Format: F Block Length: 02000 Record Length: 00080 Offset Length: 00

******* Tape Mark *********

Actual Block Size Found = 2000 Bytes.

Number of data blocks read = 252.

*** ERROR (ANSI X3.27; 6.3.2.1) - Tape Mark expected.

*** FATAL ERROR (ANSI X3.27; 6.3.2.1) - ANSI Label HDR1 missing.

Deallocating /dev/rmt0...

Tape Import Process terminated with 3 error(s), 0 warning(s), and 0 note(s).